

# North East Yorkshire Mesolithic Project

## Phase 3 Final Report

Mags Waughman

North York Moors National Park

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## **Phase 3 Final Report**

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M Waughman

North York Moors National Park

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*Tees Archaeology, Sir William Gray House, Clarence Road, Hartlepool, TS24 8BT*

*Tel: 01429 523455 Fax: 01429 523477 email: [tees.archaeology@hartlepool.gov.uk](mailto:tees.archaeology@hartlepool.gov.uk)*

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## **1. Introduction**

The North East Yorkshire Mesolithic project was set up with the broad aim of reappraising the Mesolithic archaeology of north east Yorkshire, within an area focussed on the upland landscape of the North York Moors and the adjacent Tees Valley lowlands. The intention was to create a better and more complete understanding of the Mesolithic in the project area and contribute to the changing picture of the Mesolithic nationally, as well as raise public awareness. It was hoped that this would provide an important contribution to the understanding of Mesolithic archaeology in line with a number of objectives in both regional and national research agendas to study and increase knowledge of this poorly understood period.

A phased programme of research began in 2006, carried out by Tees Archaeology in partnership with the North York Moors National Park Authority and local volunteers. Phase 1 took place between February and September 2006 and was funded by English Heritage (project reference 3862). This consisted of data gathering and assessment of the known resource. Phase 2 of the project, started in 2008, included field evaluation of a number of different sites and also received substantial English Heritage funding (project reference 3862/Eval).

Phase 3 of the project was originally anticipated as a detailed excavation phase, but the limitations of the current financial climate meant that there were insufficient available funds to enable the intensive investigation of one of the moorland spring head sites as envisaged. However, English Heritage provided a final grant to enable a concluding Phase 3, to fill in some of the gaps in the Phase 2 fieldwork and to provide an overarching set of documents to draw the project to a close. Fieldwork for Phase 3 took place in 2012 and 2013. This report provides a final overview of the project.

## **2. Background**

## **2.1 Location**

The North York Moors is an isolated upland block which is bounded by the Vale of Pickering to the south, the Vales of York and Mowbray to the west, the lowlands of the Tees Valley to the north and the North Sea coast to the east. The project area extends across this upland landscape and into the Tees Valley lowlands (Figure 1). It is defined to the north by the River Tees, to the west by the River Leven and its catchment and by the escarpment of the Cleveland and Hambleton Hills. To the south it is defined by the North York Moors National Park boundary and the southern edge of the Tabular Hills, taken as the 50m contour to the east of Kirbymoorside and 70m further west. On its western edge the National Park includes an area of up to 1km beyond the escarpment, so for consistency this margin is included within the project area and extended where the National Park boundary runs close to the foot of the escarpment.

Outside the North York Moors National Park boundary, North Yorkshire County Council has administrative responsibility for small areas on the southern fringes of the moors and in the Tees Valley. The unitary authorities of Redcar and Cleveland, Middlesbrough and Stockton (whose HER is curated by Tees Archaeology) cover the remainder of the Tees valley to the east as well as the northern fringes of the moors.

The high moors form the largest area of open heather moorland in England and Wales with SSSI status and are managed largely for grouse shooting and sheep farming. The moorland valleys, the gentler slopes of the Hambleton and Tabular Hills on the southern fringes of the moors and the lowlands of the Tees Valley are mainly farmland, dominated by pasture in the moorland valleys and with a significant proportion of arable elsewhere. There are also extensive urban and industrial developments in the Tees Valley and substantial areas of afforestation in the National Park, particularly towards the south east.

## **2.2 Previous work and recent work**

Prior to the start of Phase 1 of the project, previous archaeological work in the area had focussed on surface collection of lithics and is summarised by Manby (2003). Collections made prior to the early 1990s are largely documented in Wymer (1977) and Spratt (1993), although many of these have received little attention from lithics specialists and

have not been analysed in detail. More recent collections were also known but many of these were poorly documented. At the start of Phase 1, the three HERs maintained for the project area (NYMNP, NYCC and Tees Archaeology) together had about 900 entries for Mesolithic sites and finds. Of these, about 270 referred to lithic assemblages, the remainder being largely detailed entries for their component artefacts and single findspots. A proportion of the assemblages also contained diagnostic Neolithic artefacts and these have raised a number of questions concerning the chronology of the Mesolithic and Neolithic in the area (Young 1989), particularly since there are only a handful of purely Neolithic assemblages recorded on the HERs.

Within the project area there is only one recently determined radiocarbon date from deposits associated with Mesolithic artefacts (5956±51 bp; Wk-15138; associated with a single flint) and two more from the 1970s (4895±75 bp, Q-1170; 9430±390 bp, Q-1560), although there are also dates for some of the pollen profiles. Until the recent work as part of Phase 2, Highcliff Nab on the northern edge of the upland was the only Mesolithic site to have been excavated in recent years (Waughman 1996).

A number of the lithic assemblages derive from systematic fieldwalking programmes, particularly those undertaken by the former Cleveland County Archaeology Section (now Tees Archaeology), by Richard Chatterton as part of his PhD research (R Chatterton pers. comm.) and by the Great Ayton Community Archaeology Group as part of a Heritage Lottery funded project. Mesolithic finds have also been recovered from the excavation of later sites (e.g. Street House, Loftus, Vyner 1984).

The extensive palaeoenvironmental work which has been undertaken on the moors is synthesised by Simmons (1996) and Innes and Blackford (2003), but very little was recorded on the HERs at the start of Phase 1. Researchers maintain an active interest and current investigations were similarly undocumented by the HERs prior to Phase 1.

During the course of the first two phases of the project, further finds were reported from private collectors within the project area and more detail became available for some of the records already held by the project database. These include collections and investigation in the White Gill area made by Spencer Carter (S Carter pers comm) and a

substantial collection from the eastern Tabular Hills (The Appleyard Collection: Boughey 2011). New information from known sites includes more accurate locational detail for finds held in the Gray collection in Whitby Museum and information held in the Pat Stonehouse archive held by the Yorkshire Archaeological Society, although the project database has not been updated with the latter information. The detailed records of the late Roger Jacobi are also now available through the Colonisation of Britain by Modern Humans Project, also known as PaMeLA, (Wessex Archaeology, Jacobi 2014) and although the project database already had records for most of Jacobi's Mesolithic sites on the North York Moors, additional details on the lithics now complements and enhances the project record.

New excavation work has taken place at Ebberston on the Tabular Hills, undertaken in advance of proposed development of a gas drilling site where fieldwalking and subsequent trial trenching identified further areas of Mesolithic activity. Flints and charcoal were excavated at the bottom of the ploughsoil and were thought to represent the remains of occupation areas which had been disturbed by ploughing (Lyall and Powlesland 2009). Further palaeoenvironmental investigations have also taken place, with a core taken from Howdale Bog on Fylingdales Moor on the eastern periphery of the moors, dating from around 8500 bp at the bottom of the profile by comparison with similar profiles elsewhere (Innes pers. comm.) and research into the environmental context of rod microlith sites (Rowley-Conwy 2012 and see also below).

### **2.3 Aims of the Project**

The general aim of the overall project, to reappraise the Mesolithic archaeology of the project area, has four strands which underpin the objectives for each phase:

- To examine interpretations of existing data
- To clarify the chronology of the Mesolithic in this area, investigating the relationships between early and late forms of microlith and with the succeeding Neolithic

- To investigate the relationship between exploitation of the uplands and the adjacent lowlands
- To reappraise the existing models of Mesolithic occupation and subsistence in north east Yorkshire

## **2.4 Phase 1 Summary**

### *Objectives*

The objectives of the data gathering phase (Phase 1) were to:

- collate previously unpublished or unrecorded material, including privately held lithic assemblages and palaeoenvironmental evidence
- compile a database of the Mesolithic resource for the project area
- assess existing lithic collections, both in museums and in private hands
- assess the archaeological and palaeoenvironmental resource and identify potential for further investigation.

### *Results*

These objectives were successfully achieved with three key results:

1. The number of recorded sites was significantly increased and in particular more sites were recorded from lower lying and peripheral areas, where previously there were few or no recorded sites and finds. At the end of Phase 1, the project database held 293 records for sites, 38 for palaeoenvironmental sampling sites and 438 for findspots; for the purposes of this project a site was defined as a concentration of lithics numbering at least 10, or for fieldwalking assemblages a collection of at least 50 flints. New records accounted for 152 records – 64 sites, 59 findspots/small fieldwalking assemblages and 29 palaeoenvironmental sampling sites.
2. A significant number of the known lithic assemblages were found to be poorly documented and curated, and so have a limited value for further study. However, two extensive collections were notable for their potential for further work. The first made by Norman and Patricia Harbord on the northern edge of the National Park and along the coast and the second collected by Geoffrey Taylor, largely on the central moorland

plateau and in the south western part of the National Park. The Taylor collection is enormous and includes an estimated quarter to half million pieces of waste material, as well as worked items. It includes assemblages of lithics from excavations undertaken with Roger Jacobi at Pointed Stone and Money Howe (Jacobi 1978), as well as more recent fieldwalking collections from the Hambleton Hills, which have not only Mesolithic material but large numbers of Neolithic and Bronze Age tools, including stone axes. The coastal collections made by the Harbords are multi-period but include a substantial quantity of Mesolithic material with a variety of late microliths, blade cores and scrapers, some of which were found in distinct concentrations. Summary assessments of all the collections which were examined can be found in the Phase 1 report (Rowe 2006).

3. Six zones of activity were identified for Mesolithic sites in the project area. This was not intended to be a definitive categorisation, but was a broad grouping which could be used as the starting point for further investigation; understanding of these zones did, in fact, change as the project progressed (see section 4 below). Zones were established by looking at the GIS generated distributions, in comparison with altitude and the type of the nearest (modern) water source:

- Zone 1 - low-lying areas in the Tees Valley. These include the former lake basin at Seamer Carrs and sites alongside the River Tees and the former course of the Leven at Levensdale
- Zone 2 - lowland areas in prominent locations, principally overlooking the Tees estuary and what would have been the coastal plain in the Mesolithic. Typical locations are those on the Eston and Upleatham hills and down the coast at Goldsborough
- Zone 3 - the lower-lying northern and eastern fringes of the present moorland block where sites are often on broad ridges with panoramic views, with sites such as Simon Howe, Mauley Cross and Brown Hill.

- Zone 4 - prominent locations on the edge of steep valley and scarp slopes. These include Highcliff Nab, the northern edge of Urra Moor, sites on the western escarpment of the Hambleton Hills and Bransdale Ridge.
- Zone 5 - the upper reaches of streams in high moorland in locations such as White Gill, Parci Gill on West Bilsdale Moor and Butter Beck on Egton High Moor.
- Zone 6 - high moorland spring head basins. Typical sites include Ousegill Head, Peat Moss, Glaisdale Moor and Westerdale Head.

Two further topographic zones were identified within the project area (the moorland valleys and the limestone Tabular Hills), but neither of these has strong evidence for Mesolithic sites at present. No sites are known from the moorland valleys, but this may be largely a function of visibility related to land use as pasture, rather than a real indication of Mesolithic site distribution. Evidence is not completely absent from the limestone Tabular Hills on the southern fringes of the project area, but consists largely of findspots and components of multi-period fieldwalking assemblages, for which documentation is poor or non-existent.

Analysis of the data collated during Phase 1 for both the archaeological and palaeoenvironmental resource within the project area allowed a preliminary assessment of potential to be made, which has been used as the basis for the list of locations and themes for further investigation presented in Appendix 1.

## **2.5 Phase 2 Summary**

### *Objectives*

The second phase of the project was initiated to evaluate a number of sites and zones of activity, with a view to identifying those with the greatest potential for detailed excavation to provide new evidence, particularly features, radiocarbon dates and palaeoenvironmental evidence, and to determine any differences in the type of occupation found in different locations.

The principal objectives of the evaluation phase were:

- To increase general awareness of the Mesolithic within the project area.
- To carry out field investigations in three of the topographic zones defined at the end of Phase 1 - lowland sites in prominent locations, upland sites in prominent locations at the top of steep slopes and upland sites around spring head basins.
- To monitor moorland erosion, particularly along footpaths and stream gullies in order to pinpoint poorly recorded sites and identify new sites.
- Where possible, to obtain palaeoenvironmental samples and material suitable for radiocarbon dating from evaluated sites, and identify deposits which preserve plant macrofossil and invertebrate remains.

### *Results*

Evaluation of five sites took place over three seasons in 2008, 2009 and 2010 using a programme of shovel pitting on a surveyed grid, followed by targeted test pitting of one metre square or larger. Detailed descriptions of the evaluations and the methodologies employed can be found in the three interim reports (Grahame 2008, Grahame 2010, Grahame 2011). Lithic analyses are included as an Appendix in the final Phase 2 report (Rowe 2011).

The Phase 2 objectives were largely met and had the following key results:

1. A monitoring programme successfully used volunteers to record flints exposed through erosion along footpaths and in areas of bare peat and mineral soil in moorland areas. The programme ran from March 2009 until October 2010 and during this time, over 4000 flints were found, many of them from previously known sites and areas known for Mesolithic activity, but also some from new areas (Figure 2). Large concentrations of material were found in 26 locations, three of which were investigated by the Phase 2 evaluations and eight which might be considered to be extensions of the evaluation areas. Of the remainder, seven sites were completely new, including an early Mesolithic site close to Danby Beacon on the lower-lying moorland to the north of the main high moorland block.

2. Two lowland sites were evaluated in 2008 – one in a prominent location on the Upleatham Hills in the Tees Valley and the other on the coast near Goldsborough. Both sites were under arable cultivation and had been identified previously as sites of potential settlement from lithic scatters recovered through fieldwalking, with prolific assemblages including a variety of artefact types, as well as both Mesolithic and later items. They were selected because they appeared to have the greatest potential amongst the known sites identified from ploughsoil assemblages. Sites on the Upleatham Hills in the Tees Valley have been considered in the past to be typical lowland sites of Mesolithic occupation (Spratt *et al* 1976) but only one of the three known sites here was available for evaluation. On the coast near Goldsborough a number of sites have been identified, including one with evidence for hearths in the form of concentrations of burnt stone on the surface of the ploughsoil (N Harbord pers.comm.) and it was this site which was selected for evaluation as it was thought to have the potential for surviving subsoil features (see also discussion of Phase 3 below).

The lowland evaluations had limited success in identifying further Mesolithic potential. At Upleatham densities of lithics were low but indicated a possible concentration of activity on a natural rise. The assemblage demonstrates occupation from at least the late Mesolithic (and possibly early Mesolithic) through to later prehistory, consistent with assemblages from previous work in this area (Spratt *et al* 1976). Several features were identified, including a large ditch, probably an enclosure ditch, a pit and a hearth, but pottery finds indicate that these are all likely to date to the Late Bronze Age or pre-Roman Iron Age and probably associated with settlement in close proximity to two Bronze Age burial mounds located nearby on the edge of the plateau.

At Goldsborough, the very mixed lithic assemblage is characteristically similar to the previously recorded multi-period collection, although it would appear from the low concentration of items that the areas investigated are peripheral to the main focus of prehistoric activity. Two ditches were identified, probably belonging to the same

enclosure and there is the suggestion from flint blades recovered from the lower fills that this enclosure may be early Neolithic in date. Unfortunately environmental samples from the lower fills of these features produced little in the way of charred plant remains and nothing suitable for dating.

Unlike the Central Watershed and Cleveland plateaux areas of the North York Moors where peat deposits are extensive, the lower altitude areas near the coast and along the northern scarp of the moors do not contain many sites where there are organic sediments suitable for palaeoenvironmental sampling and consequently samples were taken off-site from analogous topographic locations nearby. The core from Bog House Farm (4 km to the SSW of the Goldsborough evaluation) held a pollen record from Late Glacial times to after the Elm Decline, although preservation was poor and it had low potential for environmental reconstruction. The core from Moordale Bog (6 km to west of the Upleatham evaluation) had a longer and much better preserved profile that contained evidence from the early Holocene until after the elm decline (occurring regionally at about 5,000 BP).

3. An area on Farndale High Moor was selected in 2009 to evaluate the upland zone of prominent locations above steep valley sides. Previously known finds from this area include collections made over several years by a number of people, but only recorded with grid references accurate to six figures (Wymer 1977, Radley 1969). However, the volunteer monitoring programme showed that many flints were exposed here, largely along two eroding footpaths, therefore evaluations were targetted around these paths and also examined the apparently undisturbed 'blank' area between them. A scatter of numerous, small and well-defined concentrations of flint was found across a wide area and a few shallow features were identified, including a low cairn, a gully terminus or pit and a small pit or scoop lying below or within the mineral soil. These features were difficult to interpret from the limited size of the areas investigated, but there was no suggestion that any of them was later than Mesolithic. In some areas there was also a distinct layer of sandstone fragments within and above the mineral soil which is not thought to be completely natural in origin. Most of the lithics were found at the interface between the peat and the mineral soil, but some

were also found within the mineral soil. Environmental samples produced little plant macrofossil material and no material suitable for AMS dating.

A major lithic assemblage was recovered (c. 3,000 pieces) dating to the late or very late Mesolithic. Microliths were the dominant tool type and these were principally narrow blade geometric types, dominated by backed blades and scalene triangles, although there were also a small number of rod forms and two broad-blade microliths. Other tool types were extremely limited, with an almost total absence of scrapers, burins, awls and denticulates. Large quantities of burnt lithics suggest deliberate or accidental disposal in hearths or camp-fires. Palaeoenvironmental samples were taken both on-site and from an adjacent location at Esklets, where the Mesolithic to Neolithic transition was marked by a significant phase of woodland burning associated with human activity.

4. Two areas were chosen in 2010 to examine the spring head basin zone, Ladhill Gill and Bonfield Gill. Ladhill Gill on Wetherhouse Moor was targetted because of a large number of surface finds made during the volunteer monitoring programme in an area which included the Peat Moss sites investigated by a number of people in the 1960s after a severe wildfire (eg Clarke 1973). Despite the presumed fire damage, this location was selected for Phase 2 evaluation because recent finds suggested that there might still be undisturbed material in the area and because it offered the opportunity to assess the impact of wildfire events on known Mesolithic sites.

The evaluations showed that the area had indeed been substantially damaged by the fire and subsequent collecting activities. Moreover, the effects of recent track construction and associated drainage works could be seen to have cut through the areas of Mesolithic activity, and it was this more recent disturbance which had revealed the lithics collected by the volunteers. Only one cut feature was found in the test pits and this may be natural in origin, although likely to have been open during the Mesolithic. Despite the large numbers of flint exposed and collected, both in the 1960s and more recently, the lithic assemblage from the evaluation was relatively small, and had a limited chronological range within the late Mesolithic, with microliths being predominantly scalene triangles; a few Bronze Age flints were probably associated with a nearby small group of clearance cairns. Palaeoenvironmental samples were

taken from Meggy Mires (1 km to the north of the evaluations) and included well-preserved Mesolithic deposits, with evidence for forest burning c. 6,000 BP and around the time of the elm decline.

The head of Bonfield Gill on Bransdale Ridge was selected because of the high density of previously recorded sites, which included lithic assemblages with large numbers of rod microliths and some with later prehistoric artefacts, as well as being the location of the Pointed Stone excavations in the 1970s (Jacobi 1978). This area therefore had the potential not only for evaluating the type of location, but also for investigating the chronology of the Mesolithic from early to very late. Only a few finds had been made during the volunteer monitoring programme in this area, but those that had been made were used to direct some of the evaluation work.

Two of the Pointed Stone excavation areas (Pointed Stone 2 and 3) were positively identified and recorded during the evaluations and these were used to focus some of the investigations. This was an important bonus since the previously recorded grid references for these sites placed them on the east side of the ridge, overlooking Bransdale, although descriptions contained within the site archive suggest that they were actually at the head of Bonfield Gill. Some flint was found in test pits adjacent to these areas, although much less than one might expect, given the quantities recovered during the excavations. There were also indications of shallow features, but these were not recognised as such during excavation. The test pits in this area, as well as some of those further to the south on the ridge, contained layers of weathered stone similar to those found in the Farndale evaluations, in some cases with very well-defined edges which suggested a man-made origin.

No early Mesolithic flint was found, but the lithics included nothing diagnostically post-Mesolithic. Microliths were the most common tool type, with a very limited range of other tool types present. The microliths were all narrow blade types, dominated by backed blades and scalene triangles. This is a distinct contrast to the microlith types recorded from the Pointed Stone excavations, which were all in the broad blade tradition of obliquely blunted points, isosceles triangles and elongated trapezes (Jacobi 1978, 315).

Large quantities of burnt lithics suggest deliberate or accidental disposal in hearths or camp-fires. Pollen samples from adjacent peat deposits indicated disturbance of the vegetation around the time of the elm decline.

5. Awareness of the Mesolithic period was raised through production of a leaflet aimed at the general public and widespread volunteer involvement in both the fieldwork seasons and the monitoring programme as well as the provision of information and all of the reports through the Tees Archaeology website . Talks about the project were given to a number of local groups and societies.

6. A series of flint factsheets were produced and were circulated to the regional museums to assist them with managing their lithic collections.

## **2.6 Phase 3 Summary**

### *Objectives*

A difficult field season at Goldsborough in 2008 meant that this site was only partly evaluated and the objectives of the project in this area were not completely achieved. Phase 3 was proposed to draw to the project to a close by completing the evaluation of the Goldsborough site and providing an overview and synthesis of the fieldwork which has been carried out over the last seven years. The objectives were as follows:

- To carry out a further season of fieldwork at the lowland zone site at Goldsborough, in order to provide a more complete evaluation than was possible in 2008, when very poor weather severely restricted the proposed work.
- To test the suitability of varying archaeological methods (geophysical survey, fieldwalking, shovel pitting and trial excavation) on Mesolithic plough-zone archaeology.
- To produce a series of reports and documents to provide a conclusion for the project and disseminate the results to different audiences.

The Goldsborough site is on the coast in an area where a number of sites had been identified, including one with evidence for hearths in the form of concentrations of burnt stone observed on the surface of the ploughsoil (N Harbord pers. comm.). This indicated that subsoil features might survive. Goldsborough is in a similar location to the recently excavated site at Howick on the Northumberland coast (Waddington 2007a) - on a cliff-top, overlooking low-lying coastal areas – and it was thought possible that the occupation at Goldsborough could have been of a similar nature. Evidence from the former low-lying coastal zone is absent from the project area, but sites such as Goldsborough may have been associated with the type of evidence found in Hartlepool Bay to the immediate north (Waughman 2005).

#### *Geophysical survey*

A high resolution geomagnetic survey was carried out in May 2012 (Archaeological Services Durham University 2012) over an area of 3.2 ha, including both the area evaluated in 2008 and a large part of the remainder of the field where lithics had previously been collected. Unfortunately, the northern part of the area had been deep ploughed into ridges and planted with artichokes to provide cover for partridges during the autumn shooting season and the effects of these ridges had to be filtered from the results before they could be interpreted.

A number of features were identified (Figures 3 and 4), including a probable ditch aligned north-south which may be part of a possible enclosure recorded during the 2008 fieldwork and a number of soil filled features such as small enclosures and ring-ditches, all of which are likely to be later prehistoric in date. A number of pit like features were also identified (including a small group of anomalies which originally were not interpreted as possible features in the geophysics report but have since been identified as such), some of them in apparent alignments, and potentially these could relate to Mesolithic, or at least earlier Neolithic occupation. The two sections of possible enclosure ditch recorded in 2008 appear to correspond to geomagnetic anomalies, but a closer inspection of the grey scale plot (Archaeological Services Durham University 2012) demonstrated that the anomalies were quite regular and may have been the test pits themselves. The weakness of many of the geomagnetic anomalies was taken as an indication that the subsoil features had been truncated by modern ploughing.

### *Fieldwalking*

It was originally intended to carry out fieldwalking across the whole of the field on which the evaluation was focussed, but the recent change in agricultural regime meant that the northern part of the field which had been planted with artichokes (including the area of the 2008 evaluation work) was not available. Restrictions imposed by the landowner also meant that the fieldwalking was less intense than planned and took place over two days in September 2012 (Grahame 2014). The density of finds was low and no clear concentrations were identified (Figures 3 and 5). The lithic assemblage is small, but consistent with the multi-period assemblages recovered from both previous fieldwalking by the Harbords and from the 2008 fieldwork.

### *Shovel pitting and test pitting*

The change in agricultural regime to a cover crop for partridges also restricted the shovel and test pitting programme. Permission was not granted to carry out this part of the programme following the fieldwalking and it had to be postponed until March 2013, when only the artichoke planted northern part of the field was available. Further limitations on the extent of the investigation came from the unusually severe wintry weather conditions during the second part of the fieldwork season.

The results from the shovel and test-pitting programme are described in detail in the Phase 3 fieldwork report (Grahame 2014). The most significant find was initially thought to be a layer of fragmented sandstone which included some burnt pieces and concentrations of charcoal, which was tentatively identified as the site of a hearth. However, radiocarbon dating of charcoal from two samples taken from this feature returned four separate Bronze Age dates (Marshall *et al* 2014), indicating that the initial interpretation as a Mesolithic feature is unlikely to be correct. Two possible stakeholes were also identified (in a shovel pit which was subsequently extended), but interpretation was not certain given the small size of the area investigated. Other features identified in the test pits corresponded to features identified from the geophysical survey and have characteristics more suggestive of a later prehistoric date; radiocarbon dating has confirmed one of these features as Bronze Age (Marshall *et al* 2014).

The number of finds was small and as was the case with the fieldwalking and the 2008 evaluations, the lithic assemblage was mixed. However, a higher proportion of diagnostic items belonged to Mesolithic or earlier Neolithic technologies (Rowe 2013). The lithic industry of all periods appears to have been based on the exploitation of locally available raw material and all phases of flint reduction from primary knapping to production of tools is evident. The Mesolithic-earlier Neolithic items were fairly evenly distributed across the area investigated by shovel and test-pitting (Figure 5), although fewer were found toward the northern edge and the area investigated in 2008.

### **3. Evaluation of Fieldwork Methodologies**

The Phase 2 methodology of a programme of shovel pitting on a surveyed grid followed by targeted test pitting was initially devised as a method of prospection in arable fields where fieldwalking was not possible. A programme of augering based on that used for investigation of lithic scatters in the Pennines (Spikins 2002) was originally proposed for the moorland sites selected for evaluation. In these locations, the size of the areas being examined and the lack of recent finds from some of them (eg the 'control' area between the eroding paths at Farndale and locations on Bransdale Ridge) meant that there was no apparent concentration of material on which to centre the investigation and it was difficult to apply the technique of augering in the way it had been done in the Pennines. Consequently it was decided to extend the shovel pitting methodology which had been successfully employed in the arable locations. The technique was found to be an effective method of site evaluation that allowed the identification of concentrations of flint over wide areas and helped to determine the best location of test pits. Excavation of these test pits showed that although sub-surface remains of Mesolithic activity are very subtle in the moorland areas investigated, features do survive but are often ephemeral and difficult to interpret in small-scale excavation.

For the Phase 3 fieldwork, it was decided to combine a number of evaluation methodologies in order to compare the effectiveness of each technique. Geophysical survey has only recently begun to be used more widely on Mesolithic sites as the effectiveness of the method in identifying the ephemeral subsoil features which might be

expected on sites of this date was not certain. On a number of occasions in recent years, however, Mesolithic features have been clearly identified by geophysics, although not necessarily recognised as such prior to excavation. These include a substantial pit excavated in the Ingleton area of the Pennines (Howard 2007), the East Barns house, East Lothian (Gooder 2007) and features at Birdcombe in Somerset (Gardiner 2007); only in the latter example was the site previously known to have Mesolithic occupation.

The high resolution gradiometer survey at Goldsborough identified a number of features, some of which are likely to be later prehistoric in date, but including potential Mesolithic features. Unfortunately apart from the features already identified in the 2008 test pits, none of these potential features were recognised in the subsequent shovel and test pitting programme, despite the fact that many of the shovel pits were located above geophysical anomalies. Moreover the possible hearth and other shallow features which had been tentatively identified through excavation did not appear as anomalies in the geophysics plot, and the highest densities of finds did not correspond to areas with geomagnetic anomalies (Figure 4).

The area in the north west corner of the field with the greatest number of geomagnetic anomalies did, in general, produce both more finds and more diagnostically Mesolithic and early Neolithic lithics, but with such small numbers of finds involved and the lack of clarification of features represented by the anomalies, it is difficult to draw any firm conclusions. Away from this corner of the field, other clusters of probable pits were identified from the geophysical survey, but again shovel and test pitting failed to recover any supporting evidence for these features. This poor correlation between the geophysics and excavation results may be partly because the original strategy was restricted after the change in the cropping regime, but could also be an indication that the technique is not suited to identifying this type of feature in this type of location and land use. Some of the geophysical anomalies, at least, may in fact reflect variations in the underlying subsoil and bedrock rather than archaeological features.

Direct comparison between the different techniques employed in the Phase 3 fieldwork is made difficult by the restrictions imposed by the change in agricultural regime which did not permit the use of all three techniques in any one part of the field and in particular

it has not been possible to compare the use of fieldwalking with the use of a shovel pitting programme. Low densities of surface finds meant that fieldwalking was not an effective technique. The low numbers from both the fieldwalking and the 2008 and 2013 excavations may be a reflection of the intensity of previous surface collections over this field. It has been suggested that more closely spaced transects than were used here might be more appropriate for identifying small Mesolithic flint scatters (Spikins 2010), but the poor visibility resulting from surface debris from the harvested crop suggests that closer spacing might not have made a significant difference here. The lack of surface concentrations allows no possibility of a correlation with possible underlying features identified from overlapping area of the geomagnetic survey.

The programme of shovel and test pitting proved to be the most effective methodology during Phase 3 for identifying Mesolithic activity, given the constraints under which the fieldwork took place, but was insufficiently tested in comparison with other techniques to be able to make a more generalised assessment.

#### **4. Overview of results**

##### *Site locations*

The landscape zones broadly defined during the first phase of the North East Yorkshire Mesolithic project have to an extent been refined during the course of the project. It is still the case that the known lowland sites can be divided into those located on low-lying ground in the Tees Valley (eg the former lake basin at Seamer Carrs, and alongside a former course of the River Leven at Levensdale) and those in prominent positions on slightly higher ground, principally overlooking the Tees estuary and what would have been the coastal plain in the Mesolithic (eg on the Eston and Upleatham hills and along the coast in locations such as Goldsborough).

Occupation of sites in the upland areas, however, is not so easy to define by topography alone. Although generally at a higher altitude, comparable areas in the Pennines have Mesolithic sites occupying prominent natural features or overlooking springs (Chatterton 2007) and occupying south-facing plateau-edge locations with good views (Spikins

2010) and this sort of landscape feature does seem to have influenced site selection in the North York Moors. While it is possible to see distinctions between the lower-lying northern and eastern fringes of the central moorland block and the south-facing slopes of the Tabular Hills to the south and the central moorland plateaux, in each of these areas sites are found in prominent locations, adjacent to water courses and especially around spring heads. It is the latter feature which seems to have had the most influence on sites located on the central moorland plateaux, where most are located between 350 and 400m OD, with concentrations recently recorded between 360m and 380m (Hinchliffe 2010). The spring head basins are often quite large and have numerous sites around their upper edges, for example around the head of Bluewath Beck on Glaisdale Moor where clusters of sites on the adjacent Cock Heads overlook the spring head, and include some of the most prolific sites such as White Gill on Westerdale Moor. In a very small number of areas, notably Bransdale Ridge and Urra Moor, sites have been identified above 400m OD, but for most of the project area these higher moors have no known Mesolithic occupation. However, there may be a bias in this apparent absence since there are also fewer paths and tracks at this higher altitude, which means that there have been fewer opportunities for flint scatters to become exposed and identified.

A probable association between Mesolithic occupation and boundaries between different topographic and vegetation zones has been observed in North East England (Waddington 2007b) and was suggested for the North York Moors some years ago (Innes 1981). Key areas were suggested to be along the spring line at around 300m OD (between the moorland plateaux and the lower slopes), along the escarpment edges (between the upland slopes and the lowland areas) and around the margins of small water bodies in any part of the upland area. This fits into the generalised definitions of broad landscape zones defined during the early part of the project, but with the greater body of evidence for Mesolithic activity now available, it is interesting that much of the activity on the central plateaux appears to be well above the spring line. However, recent research on Farndale and Westerdale Moors has identified the presence of peat-filled hollows which are thought to represent small ponds within shallow upland basins, around which lithic scatter sites, such as those at Esklets, may have clustered (Innes pers. comm. and Rowley-Conwy 2012). This type of location would have offered local Mesolithic groups both upland resources and those more usually associated with

wetland locations in lowland areas. It may be that the proximity to water bodies is a significant factor in site selection which has not yet been recognised elsewhere, but one which may in future allow greater comparison with lowland sites such as Star Carr.

### *Chronology*

Chronology is the most significant weak point in our understanding of the Mesolithic in the project area and one which the project has not been able to address. Evaluation work did not produce any Mesolithic-age radiocarbon dates and the lithics generated by the volunteer monitoring programme have not significantly changed our understanding of the distribution of either early or late Mesolithic activity in this area. There is a suggestion that locations such as Bransdale Ridge were occupied in both the early and late Mesolithic since the Pointed Stone excavations produced broad blade microliths (Jacobi 1978) and only narrow blade microliths were recovered in the recent evaluations (Rowe 2011). Several new sites identified by the volunteer programme included a broad blade component that may be significant, including a distinct scatter at Danby Beacon car park and another at Osmotherley Stones which reinforced earlier observations of early Mesolithic activity at that site (Rowe 2011). In general, however, microliths from the excavated upland sites were largely of narrow blade or geometric form.

The project has also identified a number of interesting artefacts which are suggestive of early post-glacial occupation of the area. These are small points which have the characteristics of late upper Palaeolithic artefacts (shouldered points and a Creswellian style point) and have been identified in fieldwalking collections made by the Taylors, as well as amongst more recent fieldwalking finds in the Hambleton Hills area (Meegan 2009) and from the 2009 evaluations at Farndale (Rowe 2011). It has been suggested that these artefacts could represent a persistence of an earlier form into the early Mesolithic (C. Conneller pers.comm.) and therefore be an indication of the earliest post-glacial occupation of the area. More analysis of assemblages containing such artefacts is needed before more definite conclusions can be drawn.

Although the project has produced no new radiocarbon dates, a review of the existing evidence has highlighted at least one area with potential for investigating the transition from the Mesolithic to the Neolithic. This is the White Gill area at the head of Westerdale

from where we have a single date obtained by Roger Jacobi from charcoal taken from an existing soil profile (Dimbleby 1962, Hayes 1988) in an area where the lithic assemblages are prolific (and still being exposed – S Carter pers comm and website). These assemblages include a number of sites with rod microliths (including the area on Farndale High Moor about 2km to the south which was evaluated in 2009). The radiocarbon date of  $4895 \pm 75$  bp (Q-1170) is very late, certainly later than the generally accepted date of around 4000 BC for the appearance of Neolithic characteristics across Britain, but it is comparable with dates obtained from late Mesolithic rod sites in the Pennines (eg Spikins 2002, Chatterton 2007). This suggests either that Mesolithic material culture and subsistence patterns persisted into the Neolithic in some areas, or that hunter-gatherer groups were co-existing with farmers in these areas. The latter has been postulated in western Scotland (evidence summarised in Sheridan 2010) and parts of Northumberland (Waddington and Passmore 2010). Certainly there is little evidence for agriculture on the high moorland of the North York Moors during the Neolithic and the relatively few sites displaying Neolithic characteristics (eg ceremonial monuments, ceramics) are predominantly around the periphery of the high ground.

Moore (2003) has hypothesised that the first Neolithic monuments were constructed in locations which already had significance for Mesolithic populations. While it is difficult to demonstrate the significance of a place in the context of Mesolithic occupation (cf Highcliff Nab, Waughman 1996), we have noted that most Neolithic monuments in the project area do have Mesolithic activity nearby. In reviewing the evidence away from the central moorland plateaux, a possible correlation between late Mesolithic activity and areas with significant Neolithic activity is suggested in two areas: the Hambleton Hills in the Boltby Scar area and the area between Dalby and Wykeham forests in the Scamridge Dykes area. Both of these areas were important in the Neolithic and throughout later prehistory (eg Powlesland 2011).

Boltby has no earlier Neolithic monuments, but finds of Peterborough Ware (Manby et al 2003) and a large number of polished axes (amongst other lithics) collected during fieldwalking by Geoffrey Taylor are an indication that this area was significant during the Neolithic. The Scamridge Dykes (a later prehistoric linear earthwork) area is notable for a cluster of five long barrows (compared to ten long barrows and cairns within the whole

National Park area to the north) as well as King Alfrid's cave at Ebberston (Lamplough and Lidster 1959) from which Neolithic material was excavated. Although only limited fieldwalking has been undertaken in the latter area, a very late Mesolithic presence is suggested and the finds from King Alfrid's cave included Mesolithic flints (not mentioned in the excavation report, but illustrated), while at Boltby, the very extensive multi-period fieldwalking assemblage includes a significant Mesolithic component. There is a clear suggestion that the significance of these locations persisted for a very long time and may have originated during the Mesolithic.

#### *Nature of occupation*

For the lowland sites investigated as part of this project, the results have been disappointing, with the lithic assemblages mixed with later material and largely unstratified. The evaluation work did demonstrate that although Mesolithic sites in arable cultivation have generally been severely truncated by ploughing, it is still possible for relatively shallow subsoil features to survive, as well as potentially deeper features such as pits which might also represent Mesolithic activity (see Blinkhorn and Milner 2013 for summary of evidence for Mesolithic pits), or at very least occupation around the transition to and during the earlier Neolithic. Our understanding of such sites should therefore change to recognise the potential beyond the recovery of surface lithics.

The upland sites investigated, on the other hand, appear to preserve both subsoil features and stratigraphy, although the sub-surface remains were often very subtle and difficult to interpret. Lithic assemblages from these sites were microlith dominated with a very limited range of other tool types. The raw material in the assemblages appears to be of better quality than that noted in the coastal assemblages at Goldsborough and Upleatham. Indeed the flint at Farndale was very homogenous, with the material at Bransdale and Wetherhouse Moor also apparently chosen from a number of carefully selected sources. This may suggest that the coastal sites were exploiting locally available raw material in a more expedient manner, testing raw materials close to their source before transporting the better materials for use inland.

The ephemeral nature of surviving subsoil features on Mesolithic sites has been observed for sites in the Pennines (Spikins 2010). While a number of Pennine sites have

produced hearths (eg March Hill: Spikins 2002), no hearths were identified on the sites evaluated as part of this project, although their presence could be inferred from the density of occupation and the identification of burnt flint amongst the lithics.

At the sites on Farndale High Moor and Bransdale Ridge distinct layers of sandstone fragments were found within and above the mineral soil. These had very well-defined edges which suggest an origin not entirely natural and they are tentatively interpreted as man-made features. A similar stony layer was found during excavations at Highcliff Nab (Waughman 1996), although in this case it had been disturbed by modern forestry ploughing. Although difficult to interpret, features consisting of spreads of stone have been recorded in Nidderdale (Chatterton 2007) and elsewhere (discussed in Waddington 2007b).

Perhaps the most significant result of the evaluation of the upland sites was the interpretation of the evidence on Farndale High Moor. The lithic assemblage recovered from this site was uncontaminated by later material and came from a concentration of small and probably quite discrete lithic scatters distributed across a wide area of the landscape, which may indicate repeated use of the same location over long time periods. This pattern of occupation may well occur in other locations where very many sites and findspots have been recorded over large areas. Esklets and White Gill a little to the south and north respectively of the evaluated concentration on Farndale High Moor are particular examples which might in fact be contiguous areas of occupation, as may the evaluated site on Wetherhouse Moor. Insufficient excavation was carried out to provide detailed evidence for the nature of the occupation within these extensive scatters but the large size of the areas evaluated has demonstrated the considerable geographic extent of activity. At Star Carr it has also been recognised that occupation was over a much larger area than previously thought (Conneller et al 2012), although this is much earlier in date than that at Farndale.

The identification of extensive clusters of small lithic scatters calls into question our understanding of what a Mesolithic 'site' is. Conneller (2005) observed that 'sites' may be no more than the definition of an area which has been exposed or investigated by archaeologists and that it is individual lithic scatters, however small, which each

represent an activity and may be more useful to investigate. Analysis of numerous small scatters over a larger area offers the opportunity to examine spatial and temporal relationships between individual activities and has enormous potential for understanding Mesolithic occupation of this type of 'site'. It has also begun to be recognised that the investment of time and energy required to build structures as substantial as those at Howick on the Northumberland coast (Waddington 2007a), or at Star Carr (Conneller et al 2012) suggests that Mesolithic hunter-gatherers may have been less mobile than has been accepted previously. While there is as yet no evidence for this scale of structure from the project area, the upland landscape of the North York Moors offers quite different locations from those at either Howick or Star Carr and raises questions about differences between the nature of occupation in upland and lowland situations which it has not been possible to answer through the work of this project.

#### *The Mesolithic in the landscape*

One of the key themes which the North East Yorkshire Mesolithic project hoped to address was how Mesolithic activity fitted into the landscape - why particular sites were chosen and the relationship between lowland and upland occupation. This is a question which requires further consideration before we can achieve a fuller understanding of the Mesolithic in the project area. Jacobi (1978) recognised a distinction between Deepcar and Star Carr type assemblages from the North York Moors and postulated the existence of two different social groups across the same territory during the early Mesolithic.

He suggested a model for landscape use which included summer-only occupation at moorland sites and saw an association between summer-occupied sites such as Pointed Stone (with a Star Carr-type assemblage) and winter-occupied sites in the Vale of Pickering, such as Star Carr itself. The basic tenet of this model, that the high ground was occupied in the summer months by groups of people who moved into the lower ground during the winter months, is at the core of many of the models for landscape use which have been suggested for north east Yorkshire (for example, Spratt 1993). We now know, for Star Carr at least, this model to be flawed and that the pattern of occupation is more complex, depending on more than the simple seasonal availability of resources (Legge & Rowley-Conwy 1990, Schadla-Hall 1990, Conneller et al 2012). The

relationships between upland and lowland locations within the project area and potentially also with areas further afield may similarly be more complex than the traditional model might suggest.

Models for landscape use by Mesolithic hunter-gatherers often assume a high degree of mobility, but the degree to which this was actually the case is now being questioned. Barton & Roberts (2004) suggested generalised models for both the early and late parts of the Mesolithic: for the early period, large territories in which the main base camps were moved only infrequently; for the late period, smaller territories but frequent movement within them. As we have noted above, the recent evidence for the construction of major structures (eg Star Carr, Conneller et al 2012; Howick, Waddington 2007) is taken as an indication of more sustained and extensive occupation at a smaller number of sites, possibly within smaller territories than has been previously argued.

For sites such as Farndale High Moor, it could be argued either that the characteristics indicate repeated, small-scale and possibly transient occupation, in other words indicating a mobile population, or that the density of individual scatters suggests a more sustained use of a particular area. The bias of the project's upland assemblages towards the production and use of microliths suggests a limited range of processing activities which may indicate that the primary purpose was related to hunting, but more detailed investigation is required before anything more definite can be said about the degree of mobility in this area.

If we look at the raw materials which were used on the upland sites of the North York Moors, for the later sites, at least, almost all the material is thought to be locally derived from the glacial tills of the Yorkshire coast, with little evidence for flint brought in from other areas (Levisham Bottoms towards the south east corner of the North York Moors is an exception which also includes Yorkshire Wolds flint). There is little evidence from sites such as those in the Pennines (Spikins 2002), that the Yorkshire glacial flint was carried further afield. While Roger Jacobi did note similarities in raw material in the Deepcar-type assemblages he examined from both the Pennines and the North York Moors (Jacobi 1978), the suggestion that early Mesolithic groups may have been moving

between the Pennines and upland areas further to the east is not now considered to be so likely (Spikins 2000).

We might therefore tentatively suggest that the upland sites of North East Yorkshire were part of a relatively small territory (possibly for both the early and late Mesolithic) and may have been associated with lowland sites in any of the immediately surrounding areas – the Vales of Pickering and Mowbray, the Tees Valley or the coastal strip – or indeed with other upland sites in different ecological zones. However we should remember that only a few sites have been excavated and a relatively small number of assemblages from this area have been examined in detail and so with limited evidence, we should be cautious in interpreting occupation at a landscape scale.

## **5. Conclusion**

Although conceived primarily to research the Mesolithic in North East Yorkshire, this project has had a number of wider benefits in terms of outreach, through volunteer participation, public talks and information leaflets and the provision of information through the Tees Archaeology website and in terms of conservation within the North York Moors National Park. Volunteer involvement in the monitoring programme was particularly successful, not only in identifying eroding lithic scatters, but also in generating interest and enthusiasm and demonstrates the potential of the volunteer resource. In an area such as the North York Moors, where evidence of Mesolithic activity is exposed on publicly accessible land crossed by an extensive network of paths and tracks, the use of volunteers for site prospection offers a model for public engagement and participation which goes beyond excavation of individual sites to encompass investigation of Mesolithic activity on a landscape scale.

As a result of the data collation, the evaluations and the volunteer monitoring programme, the HERs for the project area, particularly for the North York Moors National Park, have been significantly enhanced with new data, which is helping to inform management of the resource. A document on best practice management of Mesolithic sites has been produced to show some of the ways the data is being used and outline

some of the lessons learnt through the project (Waughman 2014). Moorland restoration is a particularly important area where knowledge from the project has been put to use. This has been a key theme in the conservation of the North York Moors landscape over the last few years and has had implications for a number of projects as there is a direct correlation between the areas with drainage grips where the restoration projects are generally located (often close to watersheds and around spring head basins) and patterns of recorded Mesolithic activity. A bias in the recording of sites may partly account for this correlation, where excavation of grips in the past and the development of large areas of exposed mineral soil led to the exposure and discovery of flint scatters, but also the topographic locations which seem to have been favoured by Mesolithic groups are just those locations with networks of drainage grips. While moorland restoration is likely to have a beneficial effect on Mesolithic sites in the long term, through re-vegetation, reduction in erosion and re-wetting, the execution of projects can cause ground disturbance, although at the same time offers opportunities for archaeological recording.

This project has gone a long way towards assessing the Mesolithic resource of the project area and has improved our understanding of Mesolithic activity on the upland in particular, but there are still a number of key issues which need addressing. The lack of chronological data is the most significant of these and it is clear that identifying suitable deposits for radiocarbon dating is a priority for any future research. Results from the palaeoenvironmental programme undertaken as part of Phase 2 have been good, with a number of pollen profiles associated with new radiocarbon dates. However, the macro-fossil complement to the pollen samples is still lacking. Despite the project investigations, themes which should drive further work remain as they were at the start of the project, namely the early Mesolithic, the transition from the Mesolithic to the Neolithic and the relationship between lowland and upland sites.

At the end of this project, it is clear, however, that the archaeological resource within the project area is extensive, that knowledge of it is growing, and that there is considerable potential for further research across the whole area, to varying degrees. Although a

detailed excavation phase was not included in the project as originally envisaged, the project has been successful in identifying key areas with potential for further research which is presented as Appendix 1 (see also Waughman *et al* 2012). These sites and locations may offer the potential to fill some of the outstanding gaps in our knowledge for this area as well as to address some of the themes and strategies highlighted in the new national Research Framework (Blinkhorn and Milner 2014). At a local level, the results of this project and the key areas with potential for future research will be incorporated into a revision of the North York Moors Research and Management Framework and will be used to inform conservation and management strategies. This document will sit alongside the national framework for the Mesolithic to provide the directions for future research within the North York Moors National Park.

## Appendix 1

### Potential for future work on Mesolithic sites in the North York Moors and adjacent Tees valley lowlands

Phase 2 of the North East Yorkshire Mesolithic project resulted in the identification of a number of locations and themes which had the potential to provide further evidence for and understanding of Mesolithic activity within the project area. At the end of the final phase of the project, these can be refined in the light of the new national framework for research (Blinkhorn and Milner 2014).

- Themes to address within the project area: Investigation of Holocene climate change by palaeoenvironmental analysis of samples taken through Holocene stratigraphy (including further samples from Seamer Carrs).
- Further investigation of human impact on the environment, in particular associated with different topographic locations and with the transition from Mesolithic to Neolithic. Application of higher resolution analysis and radiocarbon dating, particularly for the early Mesolithic, will also help in understanding the environmental context for these impacts.
- Investigation of changes in lithic technology and the sourcing of raw materials through the re-analysis of existing assemblages:
  - Harbord's collections from Goldsborough, which include substantial quantities of Mesolithic material, some of which was found in distinct concentrations
  - Fieldwalking assemblage from area surrounding the Street House long cairn (Vyner 1984), which contains Mesolithic material and has never been fully analysed
  - Small collection from Carr Pond on the Eston Hills (close to the Moordale Bog sampling site) which offers the potential to tie in the archaeology with the palaeoenvironmental record
  - Appleyard collection from Silpho area in the SE corner of the National Park: further detailed analysis of the Mesolithic component
  - Mauley Cross: one of the three largest recorded sites from the lower lying moorland in the eastern part of the National Park. The site is now largely

damaged by forestry ploughing but some of the assemblages have waste material as well as artefacts and so offer the potential for assemblage analysis.

- Taylor collection, in particular finds from Bransdale Ridge and the Hambleton Hills, but the assemblage as a whole has huge potential. Overall there is an estimated quarter to half million pieces of waste material in addition to artefacts, most of which have not been examined. Excavated lithics from sites at Pointed Stone and Money Howe would particularly benefit from re-examination since these two sites are often regarded as type sites for the early Mesolithic on the North York Moors (although some of the Pointed Stone Lithics were examined in the 1990s).
- Investigation of different types of site, particularly those with stratigraphy and/or structural remains has the potential to answer questions about the nature of extensive areas of occupation on the high moorland (eg Farndale High Moor).
- Investigation of sites in different topographic locations has the potential to answer questions about mobility strategies and the relationship between coastal sites such as Goldsborough with the high moorland sites.
- Investigation of chronology. Radiocarbon dates are desperately needed to elucidate questions surrounding the dating of lithic industries, the start of early Mesolithic occupation within the project area and the dating of the final Mesolithic and change to the Neolithic. Key areas for studying the Mesolithic transition might include the White Gill-Farndale High Moor area where dates might be produced from both excavation and palaeoenvironmental sampling.

### **Site investigations**

Site investigations should include a combination of fieldwalking, geophysics and larger area excavations and should be associated, where possible with further palaeoenvironmental investigation. The following locations have particular potential:

#### *Lowland zones*

- Locations in the Tees Valley: sites in this area are difficult to identify because they are largely buried beneath deposits of peat or alluvium, or built over, but

further work might provide a better context for the known sites (eg Seamer Carrs). This might include fieldwalking to identify new sites, further palaeoenvironmental investigation with fine resolution pollen analysis and radiocarbon dating to identify clearance episodes and augering to identify the former lake edge at Seamer Carrs, which provides a more northerly analogy for the Vale of Pickering. Opportunities should also be taken to examine in more detail any Mesolithic sites which are identified as a result of development work.

- Locations along the coastal strip: fieldwalking to identify sites, particularly in areas which have not been ploughed repeatedly over a long period of time. The prolific nature of previously recovered assemblages at Goldsborough, for example, suggests that there may be other similar sites which would merit investigation once identified.

#### *Upland zones: high moorland*

- Danby Beacon: an early Mesolithic site which has previously received no attention
- Highcliff Nab: early and late Mesolithic occupation, with possible features
- Farndale High Moor: late and very late Mesolithic site with numerous scatters and indications of subsoil features. Highlighted after the Phase 2 evaluation work as the area with possibly the highest potential for further work, both in terms of the archaeology and associated palaeoenvironmental investigation
- White Gill: late and possibly very late Mesolithic with prolific assemblages. Part of the same landscape as Farndale High Moor and offering the potential to investigate the Mesolithic Neolithic transition and tie in with adjacent palaeoenvironmental sites.
- Bransdale Ridge: early Mesolithic, The Pointed Stone archive has never been published fully (although some of the lithics have been analysed) and there is scope for tying this work in to the Phase 2 evaluation, particularly in order to investigate the apparent discrepancies between the two periods of work.
- Money Howe: early Mesolithic, also not fully published and offering a complement to the Pointed stone sites which would merit further investigation

- Osmotherley Stones; an early Mesolithic site, currently eroding at the head of Arns Gill on Snilesworth Moor. Since this has not been subject to repeated past collections, has a good depth of peat adjacent which may seal undisturbed stratigraphy and is located on the opposite side of the Arns Gill valley from the West Bilsdale palaeoforest (Innes and O'Brien 2006), it offers potential for investigation which could be tied in to the nearby palaeoenvironmental work.
- Sites such as Esklets, near the Farndale High Moor evaluations where localised micro-wetland environments have been identified.

*Upland zones: western escarpment and lower lying southern moorland*

- Hambleton Hills: further fieldwalking and analysis of existing assemblages to investigate relationship between areas of Mesolithic activity and significant Neolithic activity.
- Tabular Hills, particularly Scamridge Dykes area: fieldwalking to identify areas of Mesolithic activity, and investigate relationship with Neolithic.

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